Applicant : Debargha Mukherjee et al.   Attorney's Docket No.: 200310816-1
Serial No. : 10/724,284   Amendment dated Sep. 16, 2008
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Amendments to the Claims

The following Listing of Claims replaces all prior versions, and listings, of claims in the application.

Listing of Claims:

Claims 1-10 (canceled)

Claim 11 (currently amended): A machine-implemented method, comprising:

receiving a scalable encoded bitstream comprising scalable encoded media data and values of non-media-type-specific scalability attribute variables defining different adaptation points of the scalable encoded media data; ·

obtaining receiving attributes for a destination of an outbound version of the scalable encoded bitstream, wherein ones of the receiving attributes define explicit constraints on the outbound version of the scalable encoded bitstream in terms of respective ~~semantic-independent~~ functions of ones of the scalability attribute variables;

determining values of adaptation measures from respective evaluations the ~~semantic-independent~~ functions based on the values of the ones of the scalability attribute variables;

ascertaining a set of one or more candidate ones of the adaptation points of based on imposition of the constraints on the determined values of the adaptation measures;

selecting an adaptation point from the set of candidate adaptation points without regard to the scalable encoded media data; and

transcoding the scalable bit stream in accordance with the selected adaptation point to produce the outbound version of the scalable encoded bitstream.

Claim 12 (previously presented): The method of claim 11, wherein the determining comprises determining the value of at least one of the adaptation measures based at least in part on a multivariate function defined by a respective one of the receiving attributes and comprising a linear combination of products of univariate functions of ones of the scalability attribute variables.

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Claim 13 (previously presented): The method of claim 12, wherein the ascertaining comprises comparing the at least one adaptation measure to at least one constraint defined by a respective one of the receiving attributes.

Claim 14 (previously presented): The method of claim 11, wherein the ascertaining comprises comparing ones of the adaptation measures to respective limit constraints defined by respective ones of the receiving attributes.

Claim 15 (previously presented): The method of claim 11, wherein the selecting comprises comparing ones of the adaptation measures to optimization constraints defined by respective ones of the receiving attributes.

Claim 16 (previously presented): The method of claim 13, wherein the products comprise product terms and the determining comprises evaluating the multivariate function based on ones of the receiving attributes specifying at least one of:
a number of product terms in the linear combination;
a number of elements in each product term;
attribute codes for attributes in each product term;
function codes for the univariate functions of the attribute values; and
multipliers for the linear combination.

Claim 17 (previously presented): The method of claim 14, wherein the ascertaining comprises comparing ones of the adaptation measures to ones of the limit constraints specifying for at least one of one of the adaptation measures at least one of a maximum value and a minimum value supportable by the destination.

Claim 18 (previously presented): The method of claim 15, wherein the selecting comprises selecting the adaptation point in accordance with at least one of the optimization

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constraints specifying at least one of a maximization and a minimization of a respective one of the adaptation measures.

Claim 19 (previously presented): The method of claim 11, wherein the determining comprises determining at least one of the adaptation measures based at least in part on an evaluation of a stack function comprising operators, and variables corresponding to ones of the scalability attributes.

Claims 20-32 (canceled)

Claim 33 (currently amended): A transcoder, comprising:

an input that receives a scalable encoded bitstream comprising scalable encoded media data and a resource description comprising values of non-media-type-specific scalability attribute variables defining different adaptation points of the scalable encoded media data, wherein the input additionally receives receiving attributes for a destination of an outbound version of the scalable encoded bitstream, wherein ones of the receiving attributes define explicit constraints on the outbound version of the scalable encoded bitstream in terms of respective ~~semantic-independent~~ functions of ones of the scalability attribute variables;

an optimizer that determines values of adaptation measures from respective evaluations the ~~semantic-independent~~ functions based on the values of the ones of the scalability attribute variables, ascertains a set of one or more candidate ones of the adaptation points of based on imposition of the constraints on the determined values of the adaptation measures, and selects an adaptation point from the set of candidate adaptation points without regard to the scalable encoded media data; and

a resource adaptation engine that transcodes the scalable bit stream in accordance with the selected adaptation point to produce the outbound version of the scalable encoded bitstream.

Claim 34 (currently amended): A computer system, comprising:

a memory; and

a transcoder that performs operations comprising

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receiving a scalable encoded bitstream comprising scalable encoded media data
and values of non-media-type-specific scalability attribute variables
defining different adaptation points of the scalable encoded media data,

obtaining receiving attributes for a destination of an outbound version of the
scalable encoded bitstream, wherein ones of the receiving attributes define
explicit constraints on the outbound version of the scalable encoded
bitstream in terms of respective ~~semantic independent~~ functions of ones of
the scalability attribute variables;

determining values of adaptation measures from respective evaluations the
~~semantic independent~~ functions based on the values of the ones of the
scalability attribute variables;

ascertaining a set of one or more candidate ones of the adaptation points of based
on imposition of the constraints on the determined values of the adaptation
measures;

selecting an adaptation point from the set of candidate adaptation points without
regard to the scalable encoded media data, and

transcoding the scalable bit stream in accordance with the selected adaptation
point to produce a scaled version of the scalable encoded bitstream.

Claims 35 and 36 (canceled)

Claim 37 (previously presented): The method of claim 11, wherein the scalable encoded
bitstream additionally comprises description metadata specifying a hierarchical model of the
bitstream, and the transcoding further comprises adapting the description metadata to represent
the structure of the outbound version of the scalable encoded bitstream.

Claim 38 (previously presented): The method of claim 11, wherein the scalable encoded
bitstream specifies combination variables in terms of respective ordered lists of ones of numeric
constants, variables, arguments, and operators; and further comprising evaluating each of the

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combination variables, wherein the evaluating comprising pushing the respective ordered list onto a respective expression stack.

Claim 39 (previously presented): The method of claim 38, wherein

the pushing comprises pushing each constant into the respective expression stack, and

the pushing of each constant comprises pushing a real numeric element corresponding to the constant into the respective expression stack.

Claim 40 (previously presented): The method of claim 38, wherein

the pushing comprises pushing each variable into the respective expression stack, and

the pushing of each variable comprises determining a numeric value of the variable for a set of adaptation points and pushing the determining numeric value into the respective expression stack.

Claim 41 (previously presented): The method of claim 38, wherein

the pushing comprises pushing one or more unary operators into the respective expression stack, and

in response to pushing each unary operator into the respective expression stack, popping the unary operator and a successive top numeric stack element out of the respective expression stack, determining a result from the popped unary operator and numeric stack element, and pushing the result into the respective expression stack.

Claim 42 (previously presented): The method of claim 38, wherein

the pushing comprises pushing one or more binary operators in the respective expression stack, and

in response to pushing each binary operator into the respective expression stack, popping the binary operator and two successive top numeric stack elements out of the respective expression stack, determining a result from the popped binary operator and the two numeric stack elements, and pushing the result into the respective expression stack.

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Claim 43 (previously presented): The method of claim 38, further comprising

calling each of the combination variables specifying a number of arguments, and

in response to each calling of a respective one of the combination variables, serially

popping the specified number of top elements from the respective expression stack, and

determining a value of the combination variable from the popped elements.

Claim 44 (new): The method of claim 11, wherein the receiving comprises receiving the

scalable encoded bitstream from at least one remote network node, the obtaining comprises

receiving the receiving attributes from at least one remote network node, and the scalable

encoded bitstream and the receiving attributes are received from different from respective

network nodes.